

H.A

Notice of Allowability	Application No.	Applicant(s)	
	10/642,846	SELLERS ET AL.	
	Examiner	Art Unit	
	Tiffany A. Fetzner	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 07/11/2005.
2. ☒ The allowed claim(s) is/are 1-3, 5-10 and 12-20.
3. ☒ The drawings filed on 23 December 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>07/20/2005</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with **Attorney Joseph M. Butscher Reg. No. 48,326** on July 20th 2005 along with authorization to charge any necessary fees to applicant's deposit account.
3. The application has been amended as follows:

A) Replace claim 1 with the following Examiner amended after-final claim 1:

Claim 1 --- A magnetic resonance imaging (MRI) device, comprising:
an inner gradient coil assembly proximate a patient positioning area;
an outer gradient coil assembly proximate a magnet assembly; and
a damping layer sandwiched between said inner and outer gradient coil assemblies, said damping layer comprising at least one **separate** viscoelastic layer **consisting of** at least one of foam or rubber. ---

B) Replace claim 2 with the following Examiner amended after-final claim 2:

Claim 2 --- The MRI device of **claim 1**, wherein said **at least one separate viscoelastic layer comprises two separate viscoelastic layers, and said damping layer comprises at least one high modulus cylinder sandwiched between said two separate viscoelastic layers.** ---

C) Replace claim 3 with the following Examiner amended after-final claim 3:

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Claim 3 --- The MRI device of **claim 2**, wherein said high modulus cylinder is composed of at least one of ceramic, glass filament wound tube, carbon fiber, and another non-conductive material exhibiting a high modulus. ---

D) Cancel claim 4.

E) Replace claim 5 with the following Examiner amended after-final claim 5:

Claim 5--- The MRI device of **claim 1**, further comprising at least one additional damping layer **consisting of at least one of foam or rubber** positioned between said outer gradient coil assembly and said magnet assembly. ---

F) Replace claim 6 with the following Examiner amended after-final claim 6:

Claim 6 --- The MRI device of **claim 1**, further comprising at least one additional damping layer **consisting of at least one of foam or rubber** positioned between said inner gradient coil assembly and said patient positioning area. ---

G) Replace claim 7 with the following Examiner amended after-final claim 7:

Claim 7 --- The MRI device of **claim 1**, wherein said damping layer comprises a plurality of high modulus cylinders, and wherein each of said plurality of high modulus cylinders is positioned between at least two **separate** viscoelastic layers **consisting of at least one of foam or rubber**. ---

H) Replace claim 8 with the following Examiner amended after-final claim 8:

Claim 8 --- The MRI device of **claim 1**, wherein said inner gradient coil assembly generates a magnetic field gradient in response to the presence of a magnetic field generated by said magnet assembly; and wherein said outer gradient coil assembly shields the magnetic field gradient generated by said inner gradient coil assembly from radiating outwardly from the MRI device. ---

I) Replace claim 9 with the following Examiner amended after-final claim 9:

Claim 9 --- A method of manufacturing a magnetic resonance imaging (MRI) device, comprising:

forming a space between a first gradient coil assembly and a second gradient coil assembly;

pouring a liquid viscoelastic material **consisting of at least one of foam or rubber** into the space;

allowing the liquid viscoelastic material to solidify within the space in order to form a **separate** damping layer between the first gradient coil assembly and the second gradient coil assembly. ---

J) Replace claim 10 with the following Examiner amended after-final claim 10:

Claim 10 --- The method of **claim 9**, further comprising positioning at least one high modulus cylinder in the space before said pouring step. ---

K) Cancel claim 11.

L) Replace claim 12 with the following Examiner amended after-final claim 12:

Claim 12 --- The method of **claim 10**, wherein the high modulus cylinder is at least one of ceramic, glass filament wound tube, and carbon fiber. ---

M) Replace claim 13 with the following Examiner amended after-final claim 13:

Claim 13 --- The method of **claim 9**, further comprising positioning plurality of high modulus cylinders in the space such that each of the plurality of high modulus cylinder does not directly contact another high modulus cylinder, the first gradient coil, and the second gradient coil. ---

N) Replace claim 14 with the following Examiner amended after-final claim 14:

Claim 14 --- A magnetic resonance imaging (MRI) device, comprising:

a magnet assembly **configured to generate** a magnetic field;

a patient positioning area;

a first gradient coil assembly proximate said patient positioning area configured to produce a magnetic field gradient in response to the presence of a magnetic field generated by said magnet assembly;

a second gradient coil assembly proximate said magnet assembly configured to block the magnetic field gradient generated by said first gradient coil assembly from radiating outwardly from the MRI device; and

a damping layer sandwiched between said first and second gradient coil assemblies, wherein said damping layer comprises at least one high modulus cylinder sandwiched between two **separate** viscoelastic layers **consisting of at least one of foam or rubber**. ---

O) **Replace claim 15 with the following Examiner amended after-final claim 15:**

Claim 15 --- The MRI device of **claim 14**, wherein said high modulus cylinder is composed of at least one of ceramic, glass filament wound tube, and carbon fiber. ---

P) **Cancel claim 16.**

Q) **Replace claim 17 with the following Examiner amended after-final claim 17:**

Claim 17 --- The MRI device of **claim 14**, further comprising at least one additional damping layer **consisting of at least one foam or rubber** positioned between said second gradient coil assembly and said magnet assembly. ---

R) **Replace claim 18 with the following Examiner amended after-final claim 18:**

Claim 18 --- The MRI device of **claim 14**, further comprising at least one additional damping layer **consisting of at least one of foam or rubber** positioned between said first gradient coil assembly and said patient positioning area. ---

S) **Replace claim 19 with the following Examiner amended after-final claim 19:**

Claim 19 --- The MRI device of **claim 14**, wherein said damping layer comprises a plurality of high modulus cylinders, and wherein each of said plurality of high modulus cylinders is positioned between at least two **separate** viscoelastic layers **consisting of at least one of foam or rubber**. ---

T) Replace claim 20 with the following Examiner amended after-final claim 20:

Claim 20 --- The MRI device of **claim 14**, further comprising a radiofrequency (RF) coil assembly **configured to** transmit a radiofrequency pulse and detect a plurality of MR signals induced from a subject being imaged. ---

The following is an examiner's statement of **Reasons for Allowance**:

4. With respect to **Examiner Amended after-final claims 1, 9, and 14** These claims are allowable over the **prior art of record** because the **prior art of record** does not disclose or suggest an MRI device/method comprising "A magnetic resonance imaging (MRI) device, comprising: **an inner gradient coil assembly proximate a patient positioning area; an outer gradient coil assembly proximate a magnet assembly; and a damping layer sandwiched between said inner and outer gradient coil assemblies**, said damping layer comprising **at least one separate viscoelastic layer consisting of at least one of foam or rubber,**" in combination with the remaining limitations of each of the claims. It is the combination of the claim limitations taken as a whole, and the "consisting of" limitation, which prevents the viscoelastic-damping layer from including any other component aside from foam, rubber, or a combination of foam/rubber that constitutes both the novelty and non-obviousness of applicant's claims.

5. In the prior arts of record such as **Edelstein et al.**, the viscoelastic damping layer has more components than just at least one of foam or rubber, (i.e. **Edelstein et al.**, has concrete as well). In the other prior arts the damping layers are not located positionally as set forth in applicant's claims. Therefore the location of the components and the specific language of "consisting of" make each of applicant's **examiner amended after-final independent claims 1, 9, and 14** allowable over the **prior arts of record**.

6. See also the Response to after-final arguments in the examiner's comment below.

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Examiner's Comment

Information Disclosure Statement

8. The information disclosure statement (IDS) submitted on 08/18/2003 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement.

Drawings

9. The Formal drawings submitted December 23rd 2003 have been approved by the official draftsperson and are acceptable to the examiner.

Canceled Claims

10. **Claims 4, 11, and 16** are canceled as per applicant's April 8th 2005 response, which amends the independent claims to include the canceled limitation.

Response to After-final Arguments

11. The examiner has considered applicant's **after-final** arguments with respect to **claims 1-3, 5-15, and 17-20** from the **July 11th 2005 After-Final Amendment and response**. The examiner cannot enter the after-final amendment because applicant forgot to list **claim 16 as canceled**. This claim was canceled earlier in applicant's April 8th 2005 response.

12. The examiner agrees with applicant's arguments found on page 7 paragraph 2 and pages 8 through 10 of the July 11th 2005 response that:

"The Applicants note that the transitional phrase "consisting of" excludes any element, step, or ingredient not specified in the claim." See MPEP at 2111.03. The Applicants also note that the limitation "consisting of at least one of foam or rubber," means foam (only foam, but still "at least one of foam or rubber"), rubber (only rubber, but still "at least one of foam or rubber"), or a combination of foam and rubber (which is still "at least one of foam or rubber", because it includes both)." The Applicants have amended these claims to conform to the suggestions made by the Examiner. [See page 7 paragraph 2 of the July 11th 2005 After-final response.]

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Edelstein relates to a gradient coil assembly with an annular space" between inner and outer gradient coil windings "filled with a filler material and, more particularly, to a concrete filler material comprising cement and a selected aggregate material."

Edelstein at column 1, lines 6-13.

Edelstein discloses a system in which a "concrete material, preferably a conglomerate of Portland cement and one or more selected aggregates, affords more effective suppression of vibration and noise." *Id.* at column 3, lines 9-13. "Alternatively, a concrete cylinder with a hollow annulus, i.e., a cylindrical concrete sleeve" may be used. *Id.* at column 3, lines 18-25.

Edelstein, however, does not teach, nor suggest, a "damping layer comprising at least one separate viscoelastic layer consisting of at least one of foam or rubber," as recited in claim 1, as amended. While **Edelstein** discloses concrete layers, and even layers of material that are a mixture of concrete and other materials, **Edelstein** does not teach separate layers composed of foam and/or rubber.

Edelstein discloses a layer of concrete. See *id.* at column 4, lines 62-64 ("As shown in FIG. 3, concrete 26 is then poured into cylindrical space 13 from a nozzle 28, filling the space completely."). **Edelstein** also discloses a hollow concrete cylinder. See *id.* at column 5, lines 42- 45 ("A concrete cylinder 36, of a hollow cylindrical, or annular, construction and of appropriate inner and outer diameters, is disposed coaxially into cylindrical space 13.. .").

Additionally, **Edelstein** discloses that various materials may be added to the concrete, thereby forming a single concrete filler having additional materials mixed throughout.

The concrete filler can be made in many sizes and forms, and also of many different compositions, to optimize its properties as a filler for the present purposes. Generally, concrete (i.e., "conventional" or "standard" concrete) consists of Portland cement and an aggregate. The aggregate may comprise a selected one, or combination, of materials having lower density than Portland cement, such as expanded shale, fly ash and pumice that reduce the weight, but have minimal adverse impact on the strength and stiffness of the concrete, compared to normal (i.e., higher density) concrete. Also, foam can be introduced into the concrete to make it lighter in weight. Fibers, such as glass, fiberglass, carbon fiber and plastic fibers, can be included to increase tensile strength, which is important since concrete cylinders 36 employed in the second and third embodiments of the invention have relatively thin annular walls compared, for example, to the annular wall thickness of poured concrete cylinder 26 in the first embodiment of FIGS. 1-4. . . . One preferred embodiment, with beneficial results was obtained using a concrete made of cement with pumice aggregate and a water-latex solution.

Id. at column 7, lines 28-52 (emphasis added). As clearly shown above, **Edelstein** discloses a concrete layer that may be formed **as a mixture of concrete and other materials, such as foam or a water-latex solution**. As such, **Edelstein** discloses a layer that includes concrete and other materials throughout. **Edelstein**, however, does

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not teach, nor suggest, a "separate viscoelastic layer consisting of at least one of foam or rubber." Instead, **Edelstein's** "filler" includes concrete and may include additional materials, as well. That is, **Edelstein** does not teach, nor suggest, a "damping layer comprising at least one separate viscoelastic layer consisting of at least one of foam or rubber." Thus, at least for this reason, the Applicants respectfully submit that **Edelstein** does not anticipate or render unpatentable **claims 1, 9, 14**, or the claims that depend therefrom." [See page 8 through page 10 of the July 11th 2005 response.]

13. The applicant's amendment after-final could not be entered due to an error in claim recitation but the arguments presented in this response have been considered and are considered to be of record by the examiner.

14. The examiner also notes that because **Edelstein et al.**, is available as prior art only under 102(e) and that **Edelstein et al.**, reference was commonly owned / assigned to the General Electric (GE) company/corporation at the time that the invention was made. Therefore the **Edelstein et al.**, reference is not available as prior art under 35 USC 103(a), and the examiner acknowledges that the 103(a) rejections of the last final office action are therefore rescinded.

Prior Art of Record

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A) **Feenan** US patent 6,492,816 B1 issued December 10th 2002, with an effective US date of June 7th 2001.

B) **Dachniwskyj et al.**, 5,570,021 issued October 29th 1996. [This is the prior art referred to by **Edelstein et al.**, which has epoxy between each inner and outer corresponding gradient coil set]. The examiner notes that epoxy is not viscoelastic and is different than the requirement that the viscoelastic layer be entirely foam, rubber, or foam/rubber.]

C) **Petropoulos** US patent 6,011,394 issued January 4th 2000, filed August 7th 1997.

D) **Hirata** US patent 4,594,781 issued September 4th 1990. This reference does not have the viscoelastic layer located between two separate first/second or inner/outer gradient coil assemblies as required by applicant's claims. The x, y, z, gradient coils taken together constitute a first gradient assembly. **Hirata** does not have **two separate first/second or inner/outer** gradient coil assemblies. In order to have two gradient

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assemblies, **Hirata** would necessarily have to have two separate sets of x, y, z, gradient coils. **Hirata** only has one set of x, y, z, gradient coils. Additionally when the location of the viscoelastic layer(s) of **Hirata** are compared to applicant's claims, the location / position of the viscoelastic component is not located where required in each of applicant's independent claims.

E) Edelstein et al., 6,441,614 B1 issued August 27th 2002, filed December 2nd 1999. This reference fails to overcome applicant's amended independent claims, because **Edelstein et al.**'s damping layer also has cement present, and applicant's after-final amended claims require that the viscoelastic damping layer is "consisting of at least one of foam or rubber" which includes within its scope only the possibilities of foam, rubber, or foam and rubber together. The use of cement by **Edelstein et al.**, eliminates this reference from being prior art against the claims of the instant application. Not available under 35 USC 103(a) because it was commonly owned / assigned at the time the invention was made.

F) Feenan PCT publication WO 01/25808 A1 published 12 April 2001.

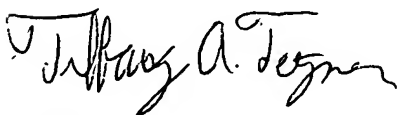
G) Feenan US patent application Publication 2005/0134269A1 published June 23rd 2005, filed January 21st 2004, with a GB priority of December 22nd 2003. This application is not available as prior art because **applicant has an earlier effective US filing and priority date of August 18th 2003.**

H) See additionally all of the examiner's citations of the PTO form 892 attached to the office action of September 16th 2004, as each reference noted is pertinent to the claims of the instant application.

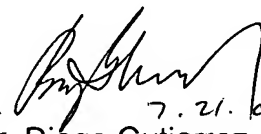
Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

17. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(703) 872-9306.**



TAF
July 20, 2005


fr Diego Gutierrez
Supervisory Patent Examiner
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